

WHAT IS CLAIMED IS:

- 5 1. A pipetting apparatus comprising:  
a pipette having a nozzle;  
pipette holding means for holding said pipette;  
a piston fluid-tightly sliding along an inner wall of said  
pipette;  
piston holding means for holding a portion of said piston; and  
instantaneous position changing means for changing a  
10 position of said piston with said piston holding means by a short  
distance with respect to said pipette holding means to jet a portion of  
a liquid in said pipette through said nozzle as a drop.
- 15 2. A pipetting apparatus as claimed in claim 1, wherein said  
instantaneous position changing means comprises a motor, said  
pipetting apparatus further comprises moderately position changing  
means for moderately changing said position of said piston with said  
motor to suck and discharge a desired amount of said liquid, and  
said motor is commonly used between said instantaneous position  
20 charging means and said moderately position changing means.
- 25 3. A pipetting apparatus as claimed in claim 1, wherein said  
instantaneous position changing means comprises a piezoelectric  
actuator.
4. A pipetting apparatus as claimed in claim 1, further comprising

an attachable nozzle cap being attachable to said pipette and having a nozzle-cap nozzle for jetting said portion of said liquid through said nozzle and said nozzle-cap nozzle, a diameter of said nozzle-cap nozzle being smaller than that of said nozzle.

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5. A pipetting apparatus as claimed in claim 1, further comprises; detection means for detecting said portion of said liquid jetted from said pipette; and

confirming means in response to said instantaneous position changing means and said detection means for confirming that said portion of said liquid is jetted and outputting a confirmed result.

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6. A method of pipetting a liquid with a pipette and a piston fluid-tightly sliding along an inner wall of said pipette comprising the steps of:

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(a) sucking said liquid with said piston; and

(b) instantaneously changing a position of said piston with respect to said pipette by a short distance to jet a portion of a liquid in said pipette as a drop through said nozzle.

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7. A method as claimed in claim 6, wherein said step (b) is repeated to jet a desired total amount of said liquid.

8. A method as claimed in claim 6, further comprising the step of determining said short distance in accordance with a desired amount of said liquid, wherein in step (b), said position of said piston is

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changed instantaneously by said short distance determined in accordance with said desired amount.

9. A method as claimed in claim 6, between said steps (a) and (b),  
5 further comprising the steps of attaching an attachable nozzle cap to said pipette at said nozzle, said attachable nozzle cap having a nozzle-cap nozzle of which diameter is smaller than that of said nozzle; and

changing said position of said piston to fill with said liquid in  
10 said attachable nozzle cap, wherein in said step (b), said portion of said liquid is jetted through said nozzle and said nozzle-cap nozzle.

10. A method as claimed in claim 6, further comprising the steps of:  
detecting said portion of said liquid jetted from said pipette;  
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confirming that said portion of said liquid is jetted in response to said instantaneous position changing means and said detection means and outputting a confirmed result.

- 20 11. A pipetting apparatus comprising:  
pipette holding means for holding a pipette having a nozzle  
and a piston fluid-tightly sliding along an inner wall of said pipette;  
piston holding means for holding a portion of said piston; and  
moving means for moving said piston with said piston  
25 holding means toward said nozzle by a short distance for a short time interval to jet a portion of a liquid in said pipette as a drop

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**THE UNIVERSITY OF CHICAGO**